

Chemical Problems in Aquatic Environments



Sources of Chemical Pollution



Diffuse sources

- Agriculture
- Forestry
- Septic tanks
- Aerial deposition

Point sources

- Industrial discharges
- Sewage treatment works

Key Pollutants

Major nutrients:

- Nitrogen
- Phosphorus
- Carbon

Sediments

BOD

Pesticides

Coliforms

Metals

Micro-organics

- Steroid Oestrogens
- Pharmaceuticals
- Surfactants

Nano-particles

- Metal oxides
- Fullerenes

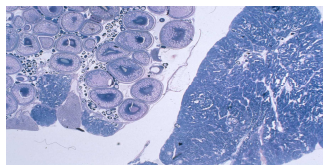
Major Challenges

Eutrophication of UK freshwaters, estuarine and marine waters

Degradation of headwaters

Endocrine disruption

Compromised drinking water sources



Our approaches

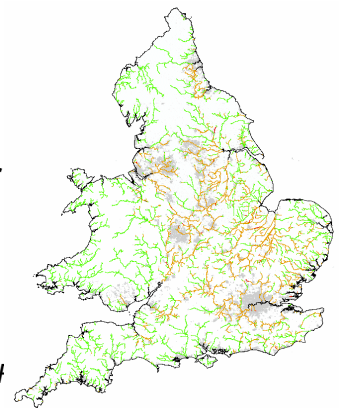
Routine Monitoring

Development of monitoring schemes to comply with legislation and reporting requirements

Focused monitoring for research

A particular strength of HYDRA. Notable recent examples include work on

- Lowland permeable catchments (NERC LOCAL)
- Measuring pesticide and metabolite transport in surface and groundwater



Biological Monitoring

- Assessing the impact of multi-stressors on a population
- Tracking changes in ecosystems over time
- Determining the impact of individual and multi-stressors on aquatic ecology
- Developing tools to support implementation of the EU Water Framework Directive
- Developing new methods for environmental diagnosis, including biomarkers for key environmental pollutants

Modelling

Risk assessment of new chemicals discharged to waters

- Reconstruction of historic contamination of waters
- Source identification at field to landscape scale
- Scenario testing for integrated river basin management
- Quantification of uncertainties in model

A Useful Framework

Where does it come from?

What effect does it have?



Where does it go?

Find out more.....www.hydra.uk.net